extended over the region between Guayaquil and Riobamba, at the center of the valley region between the double range of the Andes which exists in this latitude, and the triangulation is now in progress in this valley region.

Three months were spent at Riobamba, and during this time the determination of the fundamental astronomical elements, longitude, latitude and azimuth were made and the fundamental base line was measured.

The base is ten kilometers long and two measures of the base were made in two and a half months with a resulting difference between them of seven millimeters. A four-meter bar was used in measuring this base.

After measuring the base the mission was divided into two parties, one of which continued the triangulation in the vicinity of Riobamba while the other proceeded to Quito for the purpose of measuring a base of verification and to determine the latitude of the northern extremity of the arc. One of the officers returned to Guayaquil and proceeded to Payta in Peru by sea in order to do similar work at the southern extremity of the arc.

The programme of the work for 1901 was successfully completed and the measurement of angles now in progress in the region to the north will be complete in 1902.

In 1903 and 1904 work in the region to the south between Riobamba and Peru will be completed and the measurement of an arc of the meridian six degrees in amplitude will be an accomplished fact with only a delay of four years, or within the time fixed in the beginning.

The difficulties are great as a description of the country shows; the altitude of the work is unusual, the resources are meager, the climate unfavorable and the means of communication very inadequate. Numerous vexations have been encountered, owing to the lack of intelligence in the inhabitants, such as the destruction of signals, the digging up of the marks, etc., but these are not of a nature to stop the observers before they have completed the work they have undertaken.

In conclusion M. Bourgeois expresses his pleasure in rendering homage before the Société Géographie to the knowledge and energy of his comrades, the officers of the mission, and also to the zeal and endurance of the non-commissioned officers and soldiers who accompany them, all of whom have exerted themselves to the utmost for the honor of French science.

I. W.

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### *A FOSSIL MAN FROM KANSAS.*

IN April of the present year, two young men living in the vicinity of Leavenworth, Kansas, in the excavation of a fruit storage cave near their residence, discovered a number of human bones. They paid but little attention to them, supposing them to be of little interest, but a brief reference to the discovery finding its way into the newspapers induced Mr. M. S. Long, the curator of the museum of Kansas City, a gentleman well known for his interest in, and as a collector of, things anthropological, to visit the locality. He recognized the scientific value of the find and secured such as remained of the bones discovered. Unfortunately, while the larger part of, if not the complete, skeleton had originally been present, many of the bones had been mutilated beyond repair or lost. A newspaper account of the find was widely published as that of a glacial man.

At the request of, and in company with, Mr. Long I have recently had the pleasure of making a careful examination of the locality whence the bones came, as also of the preserved remains themselves. This examination leads me to the firm conviction that the specimen is of great interest as representing the oldest reliable human remains hitherto discovered in North America. The reference of their age to the glacial period, though erroneous, was easily inferred from the presence of the characteristic glacial boulders lying on the side hill above the excavation.

The tunnel or cave excavated by the Concannon brothers is directed horizontally into the side of a hill to a distance of seventy-three feet, near the mouth of a small though deep ravine opening on the flood plain of the Missouri River, nineteen miles northwest of Kansas City, and within a few miles of Lansing, Kansas. The skeleton was found at the

extremity of the tunnel twenty-three feet from the surface above, as determined by a ventilating shaft dug near by. The floor of the tunnel is a heavy stratum of Carboniferous limestone six feet in thickness, that outcrops at its mouth. The material excavated, nearly uniform in all parts of the tunnel, is river loess or alluvium, interspersed here and there by limestone fragments. Some of these limestone masses are of considerable size and lie, for the most part, horizontally, as though they had fallen from a neighboring cliff and had been transported by the water. The material also contains numerous snail and some clam shells, the latter with the valves united. The alluvium is so firm and indurated that the tunnel, about eight feet in diameter, has retained its shape without any protecting props or walls, nor has there been any caving of its walls or roof. The skull and larger part of the skeleton was found irregularly placed, according to the testimony of the young men, near the bottom of the tunnel, the mandible separated some five or six feet. That the skeleton was intrusive, had been buried, or its position due to a creeping or sliding of the material, is inconceivable and out of the question. That there had been any deception on the part of the finders is equally inconceivable. I discovered fragments lying on the floor of the tunnel near the place ascribed to the discovery and picked up numerous other fragments on the dump outside, including a phalange and a complete os uncinatum. The bones were found where they were reported to be, and had been deposited there by the water, at or near the time of the person's death. The cranium itself contains positive evidence of its genuineness; not only is the characteristic matrix yet firmly attached to the bone, but indurated portions are included in its sinuses. The specimen is unquestionably a fossil and was found buried twenty-three feet below the present surface in indurated alluvium that has never been disturbed since its deposition. This alluvium is, moreover, of water deposition, and not æolian, or talus from the neighboring cliffs. Distinct lines of stratification are observed, one of them running clearly the whole length of the tunnel a little above the horizon of the skeleton.

The age of the skeleton is evidently postglacial, but is nevertheless very great. Its horizon is about twenty feet above the highest water mark of the Missouri River and more than fifty feet above its present bed. Add to this at least twenty feet of river alluvium covering the fossil and we have evidence of a change of altitude in the Missouri River since the deposition of the fossil of at least forty and probably fifty feet. That is, the skeleton was deposited during the period of depression following the glacial epoch, during the time of the so-called *Equus* beds, the time of *Elephas, Mastodon,* extinct bisons, moose, camels, llamas and peccaries. I see no other possible conclusion to be drawn. I have examined the later Pleistocene deposits in Kansas in many places and have fossils of this subepoch from all parts of the state. I am confident that the Lansing man belongs in the same fauna.

Of the skull and other bones I will say little. I trust they may receive the attention of some professional ethnologist. Much credit is due Mr. Long for his appreciation of the value of the find, and for the care and infinite patience with which he has restored the badly mutilated cranium to its present satisfactory condition. The cranium appears to be of normal capacity, dolichocephalic, the forehead receding, the supraorbital and especially the supraciliary ridges prominent.

S. W. Williston.

Lawrence, Kansas, July 19, 1902.

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## *PALEONTOLOGY AT THE AMERICAN MUSEUM OF NATURAL HISTORY.*

The American Museum of Natural History has sent out four field parties, under the direction of Professor Osborn, for the collection of fossil vertebrates. Two of these are at present in Montana, one under Mr. Brown exploring the Laramie for horned Dinosaurs, the other under Dr. Matthew working farther west for Upper Miocene mammals. A third party under Mr. Granger has returned to the Como district of Wyoming and is working two quarries in that rich region; the Bone Cabin quarry is